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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,938	02/27/2004	George Rauscher	21140.001	9207

42922 7590 03/28/2006

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EXAMINER

SUHOL, DMITRY

ART UNIT	PAPER NUMBER
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3725

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

The indicated allowability of claims 1-17 is withdrawn in view of the newly discovered reference(s) to Allyne '476, Panyard et al ' 230 and Squires '053 or Lynall '270. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allyne '476 in view of Panyard et al ' 230 and Squires '053 or Lynall '270. Allyne teaches that it is known to construct a cylinder liner (5) having a flange portion (5a) from a variety of metals through any known techniques (page 4, col. 1, lines 38-56). The limitations of claim 2 are shown in figures 1 and 4.

Panyard is relied upon to teach that it is known to construct a cylinder liner from a carbon alloy steel (col. 3, lines 18-20) since a steel liner has a marked increase in stiffness over a conventional iron liner resulting in improved performance characteristics (col. 4, lines 28-30).

Squires and Lynall both teach that it is known to construct a metallic cylindrical member having flanges through the step of cold forging in a press (see figures 1-2 of Lynall and figures 1-6 of Squires).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to have manufactured the cylinder liner of Allyne from a carbon alloy steel material for the purpose of improved performance characteristics. It would have been further obvious to manufacture the flange portion of Allyne through cold forging steps in a hydraulic press for the purpose of quick and cost effective manufacture, especially since Allyne clearly states that his cylinder liner may be manufactured by any known methods.

Regarding claims 3-6 and the carbon content of the steel and the internal diameter of the cylinder liner, it would have been obvious to utilize carbon steel with carbon amount in the claimed ranges and to manufacture the cylinder liner with the claimed inner diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Furthermore, the cylinder diameter would only depend on dimensions of the cylinder block which is to receive it.

Claims 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allyne '476, Panyard et al ' 230 and Squires '053 or Lynall '270, as stated above, and further in view of Usui '621. Allyne, as modified by Panyard and Squires '053 or Lynall,

discloses most of the claimed elements but for closely fitting a forming mandrel within the internal diameter as required by claim 7 and finish machining the forged cylinder liner blank to form a cylinder liner as required by claims 7 and 14. However, the use of a mandrel during the formation of the flange portion is taught by Squires (elements 6, 15 and 24) while the step of finish machining the liner blank to form a cylinder liner is taught by Usui (col. 2, lines 42-47). Therefore it would have been obvious to include the use of a forming mandrel in the manufacture of the cylinder liner of Allyne for the purpose of ensuring that the sidewall portions of the cylinder are not deformed in an unwanted manner. It would have been further obvious to include a finish machining step in the production of the cylinder liner of Allyne for the purpose of providing a finished cylinder liner with superior qualities.

Regarding claims 9-11 and 15-17 and the carbon content of the steel (steel type) and the internal diameter of the cylinder liner, it would have been obvious to utilize carbon steel with carbon amount in the claimed ranges and to manufacture the cylinder liner with the claimed inner diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Additionally, the material used is considered a design choice in that applicants clearly state that a variety of starting materials could be used in the manufacture of the cylinder liner (applicants specification page 10, line 25). Furthermore, the cylinder diameter would only depend on dimensions of the cylinder block which is to receive it.

Regarding claim 12, applying 500 to 1000 tons of force to the press dies to form the flange portion would have been obvious since it would only depend on the materials used and final dimensions of the desired product and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 13, Squires teaches that the application of heat to the end portion of a metal tube member to forge flange ends is known (page 1, lines 6-11) while the specific step of induction heating and temperature of about 1200 degrees F would have been obvious since the examiner that official notice that such steps are well known in the metal working arts and the temperature would only depend on the desired workability of the metal work piece during deformation. Furthermore, such a step is considered a design choice in that applicants state that the process does not require the heating step as claimed (applicants specification page 11, lines 5-6).

Response to Arguments

Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dmitry Suhol whose telephone number is 571-272-4430. The examiner can normally be reached on Mon - Friday 8:30am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on (571) 272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dmitry Suhol
Primary Examiner
Art Unit 3725

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